

Impact of the IT Revolution on the Airspace System



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Strategic Programs

Air Traffic Management Systems

The Challenge

Significantly increase Airspace System capacity

- **Maintain safety during all operational phases**
- **Address changing security concerns, issues**
- **Stakeholder requirements**
- **Aircraft equipage issues**
- **Ground side constraints**
- **The Human Factor**
- **Confidence in technological and other solutions**

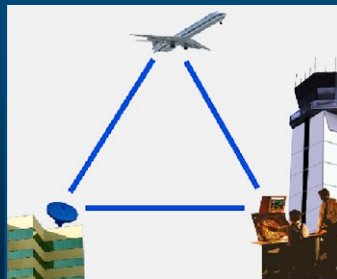
What do we have to work with?

Technologies of the IT Revolution

Communication



SATCOM



**Air/Ground
Communications**

Navigation



**Wide Area
Augmentation System**



**Local Area
Augmentation System**

Surveillance



**Primary/Secondary
Surveillance**



Surface Movement



**Precision Runway
Monitor**

ATM



STARS



AutoTrac/TracView



CAATS

Meteorology



**Terminal Doppler
Weather Radar**



**Integrated Terminal
Weather System**

How NASA is building on these technologies

Raytheon

NASA ATMSDI Program



System Resources Corp.
A Titan Company



THE OHIO STATE UNIVERSITY



Honeywell

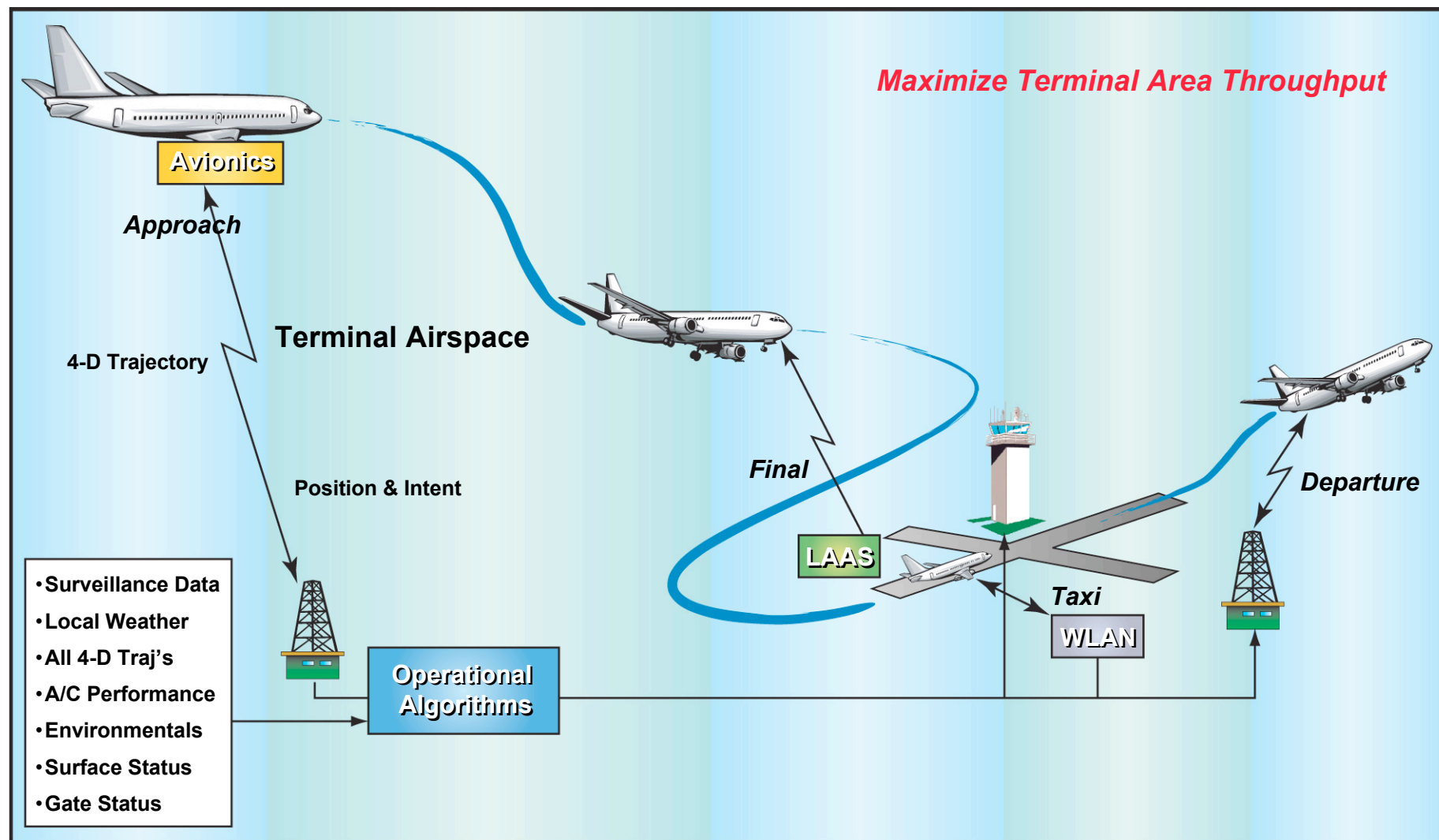
Bridging the gap between research and application



Key elements of Raytheon VAMS Terminal Area Concept:

- **Accurate 4D Trajectory Calculation**
- **Aircraft execution of required trajectories**
- **Highly reliable and secure data link**
- **Reduced (precision) separation**
- **Improved surveillance**
 - **WAAS enhanced GPS**
 - **Multi-sensor surface surveillance fusion**
 - **Mode S MSSR**
- **Airborne self separation**
- **Complex finals - curvilinear, multi-aircraft formation landings**
- **Optimized taxi routing**
- **Integrated Terminal Area information network (all stakeholders)**

Terminal Area Enhancement Concept



Turning Goals Into Reality 2020